

Explanation of Lettering on Text-figures.

<i>a.</i> , auditory nerve.	<i>ma.</i> , mandibular arch.
<i>ac.</i> , auditory capsule.	<i>md.</i> , mandibular branch of trigeminal.
<i>acp.</i> , ascending process of quadrate.	<i>mds.</i> , mesoblast of mandibular arch.
<i>as.</i> , auditory sac.	<i>mt.</i> , myotome 1-6.
<i>bp.</i> , branchial plexus.	<i>mtk.</i> , mouth.
<i>br.</i> , branchial branch of vagus.	<i>mx.</i> , maxillary branch of trigeminal.
<i>brn.</i> , brain.	<i>na. 1.</i> , neural arch.
<i>brs.</i> , mesoblast of branchial arches 1-4.	<i>nch.</i> , notochord.
<i>brsl.</i> , branchial slit 1-4.	<i>ns.</i> , nasal sac.
<i>cmm.</i> , median mandibular cutaneous branch of facial.	<i>oc.</i> , occipital arch.
<i>col.</i> , columella auris.	<i>ocp.</i> , optic cup.
<i>ctr.</i> , crista trabeculæ.	<i>opn.</i> , optic nerve.
<i>e.</i> , eye.	<i>per.</i> , pericardium.
<i>et.</i> , epiblastic thickening.	<i>poc.</i> , preoccipital arch.
<i>f.</i> , facial nerve.	<i>pop.</i> , preorbital process.
<i>fac.</i> , floor of auditory capsule.	<i>prf.</i> , profundus nerve.
<i>fov.</i> , oculomotor foramen.	<i>prn.</i> , pronephros.
<i>fop.</i> , optic foramen.	<i>q.</i> , quadrate.
<i>gf.</i> , facial ganglion and its epiblastic thickening.	<i>s. 1, 2, ...</i> , metaotic somite.
<i>ggl.</i> , ganglion of glossopharyngeal.	<i>sh.</i> , hyomandibular somite.
<i>gl.</i> , glossopharyngeal nerve and its epiblastic thickening.	<i>sk.</i> , hind limit of skull.
<i>gt.</i> , glottis.	<i>sm.</i> , mandibular somite.
<i>gtr.</i> , ganglion of trigeminal and its epiblastic thickening.	<i>sop.</i> , superior ophthalmic nerve.
<i>gv.</i> , ganglion of vagus and its epiblastic thickening.	<i>sp.1.</i> , first spinal nerve.
<i>h.</i> , hyomandibular branch of facial.	<i>sp.2d & v.</i> , second spinal nerve, dorsal and ventral root.
<i>hda.</i> , hyoid arch.	<i>spg.</i> , spinal ganglion.
<i>hyp.</i> , hypoglossal nerve.	<i>spl.</i> , spiracular slit.
<i>hypm.</i> , hypoglossal muscle.	<i>spvr.</i> , ventral root of spinal nerve.
<i>im.</i> , internal mandibular branch of trigeminal.	<i>tr.</i> , trabecula cranii.
<i>j.</i> , anastomosis of Jacobson.	<i>trg.</i> , trigeminal ganglion.
<i>ll.</i> , lateral line nerve.	<i>trp.</i> , trabecular parachordal.
<i>m.</i> , medulla.	<i>tso.</i> , tectum synoticum.
	<i>v.</i> , vagus nerve.
	<i>vll.</i> , ventral lateral line nerve.
	<i>vr.</i> , roots of vagus and glossopharyngeal.
	<i>vert.</i> , ventral root.

9. The Mammals of the Tenth Edition of Linnæus ; an Attempt to fix the Types of the Genera and the exact Bases and Localities of the Species. By OLDFIELD THOMAS, F.R.S., F.Z.S.

[Received November 29, 1910; Read December 13, 1910.]

The tenth edition of Linné's 'Systema Naturæ' is the recognized basis and commencement of all systematic zoological work, but doubtful questions in its interpretation are very numerous, and there is probably nothing more desired, by mammalogists at least, than a methodical examination of this important work, with suggestions, obtained on some definite and uniform system, for the identification of its types, both of genera and species.

For many years I have taken a very great interest in this subject, and have now ventured to prepare the present paper, with the hope that it may be of service to other mammalogists less favourably situated as regards books and specimens than I have

the privilege of being. For in all the work I have scarcely in a single instance been unable to obtain from the library of the Natural History Museum what books I have wanted to verify Linnæus's quotations, however rare and obscure they have been. Without such an advantage it would have been impossible to do the work at all.

With regard to the method used for finding the type-species of the Linnean genera, I would draw attention to the very considerable extent to which the principle of tautonymy is available. In a great proportion of cases Linnæus selected as a generic name a term which had been used by earlier writers for the single name of a member of the genus, so that among the species of any given genus there is commonly one which has among its synonyms the name used by Linnæus for the genus.

These names are generally quoted from Gesner, and comprise the most conspicuous and best-known members of each genus, so that in nearly all cases the genotype selected on this system is the very one which by general consent we should wish to have for the type. Any other rule that has been suggested, either "first species" or "elimination," is liable to produce results by no means so satisfactory—indeed, the many objections to both are too well known to need any insistence upon here. Nor can any later and arbitrary selection of types without reason assigned be taken as necessarily valid.

In two cases only, those of *Simia* and *Dasypus*, are results arrived at different from those obtained by previous writers. The shifting of the latter name from the rarer "*Euphractus*" to the really common *Tatusia* is unfortunate, but is necessary if we are to get the benefit of the general stability which is obtainable from the acceptance of the principle of tautonymy.

The case of *Simia*, however, is very different, and I confess to hoping that the suggestions which are now being made for some overruling decision in the case of certain well-known but technically misapplied names may be carried out, both as to a number of such names in general and to *Simia* in particular.

But it seems advisable, nevertheless, to put the technical case irrespective of the prospect of any such decision, and therefore (while hoping that a fiat attaching *Simia* to the Orang may go forth) I have to point out that this name should be applied to the Macaques, with *S. sylvana* (the Barbary Ape) as its type, while *Anthropopithecus* will remain available for the Chimpanzees.

Should no such fiat as I speak of ever come to pass, this allocation of *Simia* is at least better than its application to the Chimpanzees. Not only is it less confusing in itself, owing to the consequent total abolition of the combination *Simia satyrus*, connected for a century with the Orang, but now sought to be applied to the Chimpanzee, but also the genus to which it goes, that of the Macaques, is already marked as the victim of a nomenclatural change, for *Pithecus* antedates *Macaca*, and therefore one change is not much worse than the other.

Moreover, the Macaques are far less often dealt with or spoken of by outside writers, not up to date in nomenclatural technicalities, than are the Anthropoid Apes, among whom such a change has the maximum of inconvenience.

[After the completion of the present paper, there has come into my hands a copy of the "Opinions rendered by the International Commission on Zoological Nomenclature," dated July 1910, but received by members of the Gratz Congress only at the end of October.

In this publication the question of Linnean Genera in general and *Simia* in particular is dealt with, certain conclusions are come to not differing widely from my own, and the principle of tautonymy as applied to the names in Linnæus is on the whole approved of.

Two genera (*Mus* and *Camelus*) have types definitely fixed for them, twenty are mentioned as "seeming to retain as types" the species I fix for them by tautonymy, though this is "not a ruling by the Commission," and *Dasypus* is ignored.

With regard to *Simia*, the Commissioners, while seeing that the rule brought the type on to *sylvanus*, would appear to have thought it a benefit for zoology that *satyrus* should be considered as such, an opinion in which I believe but few zoologists on careful consideration would be found to agree with them. Under this idea a brief but rather far-fetched and unconvincing argument is adduced to avoid the simple conclusion about *sylvanus*, viz. :— that "an examination of Gesner's text shows that he did not use *Simia* in the specific sense of '*the simia*,' and that therefore *Simia* Gesner, as used in the synonymy of *S. sylvanus*, cannot be considered as the name of a species."

Now I have carefully examined Gesner (three editions, including that quoted), and can only say that his use of *Simia* is exactly the same as his use of other names which are accepted as tautonyms. On p. 847 he writes "de *Simia*," and gives a figure of the Barbary Ape, and then on p. 855 he begins on other monkeys under the heading "de *Simiis diversis*." Exactly in the same way we have "de *Mure*" on p. 714 (*Mus musculus*) and "de *Muribus diversis*" on p. 731; "de *Mustela*" on p. 752, "de *Mustelis diversis*" on p. 762.

It is true that the Commissioners do not definitely accept as a ruling of the Commission the above-mentioned twenty names on the rigid basis of tautonymy, but seem to take as valid Palmer's selection of the types as published in his Index (1904).

But the latter work cannot be accepted as that of a "reviser" in the true sense of the term. It is merely a bibliographical work giving an indication of what species have been currently accepted as types, without special revision by authors with all the facts before them. In no case could I admit that it should override the clear case for tautonymy presented by *Simia* equally with the twenty genera in which its results are agreed to both by Palmer and the Commissioners]

The question of the species is not so simple as that of the genera, having been complicated by the pages and pages which commentators have thought it necessary to write balancing the pros and cons in each case, weighing the importance of this reference or that, and deciding that such and such is the "primary quotation" and should be taken as the basis of the Linnean name. This balancing method, however charming an exercise of the writer's ingenuity it may provide, is unfortunately full of the personal equation, and therefore objectionable, while any method which works automatically should be welcomed by those desirous of coming to a final and impersonal decision on such points.

The system I advocate is that Linnæus's quotation of his own earlier writings should be given an absolutely overriding importance, and that, where these exist and can be traced back, all others should be ignored.

This principle is not an arbitrary one, but is quite reasonable. For when in 1758 Linnæus gave a binomial name to an animal to which he had already given in 1748 a species-number and a diagnosis (quoting it in the tenth edition), his idea of the species would clearly have been formed at the earlier date, the later edition only adding the binomial name. To accept as of primary importance in the determination of the latter some reference which was not in existence at the time of the earlier edition appears to me little short of ridiculous.

But if we take Linnæus's own Linnean quotations—which are, in most cases, of the sixth edition—we get our field of selection narrowed down at once to one or two easily traceable references, from which the basis of the author's original idea of each species is readily obtainable.

So important did Linnæus himself think the sixth edition that practically every species of Mammal in it is quoted in the tenth, and that merely by its page and number, as if that were the one edition to which attention should be paid.

Curiously enough, this does not seem to be the case in other groups than Mammals, the references to the sixth edition being omitted, and primary stress laid on the 'Fauna Suecica.'

With regard to type localities, I have made every effort to identify the places from which the specimens came that were the original bases of Linnæus's names. His own statements of habitat are for the most part too vague to be of any use, while accepting them literally would sometimes lead to grotesque errors, such as the assertion, based on Linnæus's "*Hab. in Indiis*," that "some Indian Armadillo" (!) should be taken as the basis of *Dasypus septemcinctus*. "In Indiis," in fact, hardly amounts to more than a statement that the species is exotic.

But many localities can be settled from the authors quoted, as, for example, in the case of Marcgrave, on whose descriptions* Linnæus's names for a large number of the commoner Brazilian

* 'Historiæ Rerum Naturalium,' Brasiliæ, 1648.

species were based. With all these we are able to fix as a type locality Pernambuco, for Maregrave stayed at "Moritzstadt," now Recife, most of his time, 1640-1644, while even his excursions were limited to the coast region between 5° 45' and 11° 11' S., thus taking in little more than from Rio Grande do Norte to Alagoas, a region at the centre of which Pernambuco lies.

Again, with regard to species named from the figures in Seba's 'Thesaurus,' it would not be unjustifiable to suggest that in the case of all tropical South American animals, Surinam—the great source of all Dutch collections—should be accepted as the type locality, except when the preservation of the type specimen or some incompatibility in the description shows this to have been impossible.

The alterations in nomenclature that have proved to be necessary are fortunately comparatively few, certainly far fewer than I had originally feared would be the case. Those not previously published are the following :—

- Simia*. Genotype not *satyrus* but *sylvanus*. p. 125.
- Anthropopithecus satyrus* for Chimpanzee. p. 125.
- Technical name of Barbary Ape, *Simia sylvana*. p. 125.
- Pygathrix* a distinct genus from *Presbytis*. p. 127 (footnote).
- Macaca syrichta* for *M. philippinensis* auct. p. 129.
- Manis pentadactyla* for *M. dalmani* Sund. p. 133.
- Dasypus* for *Tatu*; *Euphractus* for "*Dasypus*." p. 141.
- Arricanthis striatus* for *A. pulchellus* Gray. p. 148.
- Physeter catodon* for *Ph. macrocephalus* Linn. p. 157.

Other names here confirmed, which are unfamiliar, though not now published for the first time, are those indicated for the Whalebone Whales by Mr. F. W. True, those of certain monkeys (*Cebus*, *Mandrill*, &c.), recently pointed out by Dr. Elliot, *Presbytis azygula* for *P. mitratus*, *Cynocephalus rolandi* for the Philippine Colugo, *Elephas maximus* for the Indian Elephant, and *Myrmecophaga tridactyla* for *M. jubata*.

In one respect the present paper does not complete the examination of all the Linnean 1758 species, for a certain number are still unidentified pending the study of typical specimens formerly in the "Museum Regis Adolphi Friderici," and no doubt in many cases still in existence. I would commend to my colleagues in Sweden an examination of the old collections there preserved, with an identification of such types as are still extant. Perhaps Dr. Einar Lönnberg may be able to forward this final completion of the study of the "Zoological Bible" written by his immortal compatriot.

In the following pages the genera and species are arranged as in the 'Systema,' while opposite the name of each species on the right-hand side of the page I have placed the name of the recognized modern genus into which that species falls.

Genus 1. HOMO. p. 20.

Two species. Type, *H. sapiens*.

Species :

1. SAPIENS. p. 20.

Homo.

"Nosce te ipsum."

2. TROGLODYTES. p. 24.

A mixture of the abnormal hairy woman figured by Bontius (Hist. Nat. Med. Ind. Or. p. 84) with an account of albino negroes taken from Nils Matson.

Genus 2. SIMIA. p. 25.

Twenty-one species. Type by tautonymy: *S. sylvanus* ("Simia," Gesn.).

The species are divided into three sections, (1)* *Cauda nulla*: *Simiæ veterum*, (2)** *Cauda abbreviata*: *Papiones*, and (3)*** *Cauda elongata*: *Cercopithecæ*.

From the name "*Simiæ*," the type must clearly be sought among the first section, which contains two species, *satyrus* and *sylvanus*, and the second of these (*not the first*) should be taken as type, because among its synonyms—the first, in fact—occurs "*Simia*, Gesner, p. 847" (of 1620 edition, 957 of 1551 edition, p. 1 of German edition).

From this it would follow that, failing a fiat on the subject, the generic name *Simia* should be transferred—not to the Chimpanzee, as has been done by Matschie and Rothschild, but to the Barbary Ape and its congeners.

Species :

1. SATYRUS.

Anthropopithecus.

Linnean reference: Syst. Nat. (6) p. 3, no. 1, where the first quotation is

Tulp. Obs. p. 270, pl. xiv.

Clearly the Common Chimpanzee*, whose name (again failing a fiat) would therefore be *Anthropopithecus satyrus*.

2. SYLVANUS. p. 25.

(*Simia* or) *Macaca* †.

Linnean reference: Syst. Nat. (6) p. 3, no. 3, where the sole reference is to

Alpin. Aegypt. p. 241, pl. xvi.

This is clearly a Barbary Ape, to which therefore, instead

* Cf. W. Rothschild, P. Z. S. 1904, ii. p. 420.

† I continue to use *Macaca* provisionally, pending a decision as to "fiat" names. To use *Pithecus* (although it antedates *Macaca*) would be merely the commencement of a useless familiarity with that name, which would be again overthrown should the fiat principle fail.

of *Macacus* (or *Macaca*) *innus* or *Innus ecaudatus*, the name *Simia sylvana* would appear to be technically applicable.

The reference *Simia sylvanus* has been already frequently put among the synonyms of *Macaca inua*, so that the present identification is not a new one.

3. SPHINX. p. 25. (Mandrill *.)

Linnean reference: Syst. Nat. (6) p. 3, no. 5, where the sole reference is to Ray (Quadr. p. 158), who in turn speaks of the "Baboon Gesnero descripta et depicta."

This is, no doubt, as shown by Dr. Elliot †, the Mandrill, of which a figure and description are given on the page between 157 and 158 of Gesner's German edition (1606).

4. APEDIA. p. 25. (?)

Linnean (and sole) reference: Amæn. Acad. i. p. 278 (1749).

Not determinable from description, but if the specimen described in the 'Amœnitates' as being in the Museum Adolpho-Fridericianum still exists, the species may yet be identified.

Type locality "in Indiis," which means hardly more than "foreign." No locality at all is mentioned in the 'Amœnitates.'

5. SILENUS. p. 26. *Macaca*.

No definitive reference, the only one, that to Alpinus (p. 242), being with a query, so that the account should be treated by its own evidence only.

The description and locality, however, appear to me to be sufficient to assign the name to the Malabar "Lion-tailed Monkey of Pennant," as was done by practically every author up to Blanford.

That author, working on the basis of the 12th edition, first stated ‡ that the name did not refer to the Lion-tailed Monkey, and then later on used it for it §.

No exact typical locality available.

6. FAUNUS. p. 26. (?)

Linnean reference: Syst. Nat. (6) p. 3, no. 15, whence we get *Cercopithecus barbatus*, no. 1, Clusius, Exot. p. 371 (1605).

It does not seem possible to determine this monkey with any certainty. In the pointed white beard and white chest we have something which suggests the Diana Monkey, while, on the other hand, by the length of the beard (if mantle-hairs were mistaken for a beard) and the tufted tail a *Colobus* of some sort might be indicated.

No locality given.

* As Palmer has shown, this is the technical name for the Mandrill, if considered generically distinct from other Baboons, as it apparently should be.

† Ann. Mag. N. H. (8) iv. p. 417, 1909.

‡ P. Z. S. 1887, p. 620.

§ Mamm. Ind. p. 16, 1888.

7. PANISCUS. p. 26.

Ateles.

Linnean reference: Syst. Nat. (6) p. 3, no. 14, whence
Guariba, Marcgr. Bras. p. 226.

Ateles paniscus.

Type locality: Pernambuco.

8. DIANA. p. 26.

Cercopithecus.

Linnean reference: Act. Stockholm, 1754, p. 210, pl. vi.

Here a full description of the monkey is given, and, as Jentink * has pointed out, it is the red-thighed form to which the name *diana* was originally applied.

Type locality: "Guinea."—Liberia (Jentink).

9. CEPHUS. p. 27.

Cercopithecus.

No Linnean reference. Quotations of Marcgrave (p. 228)
and Ray (p. 156).

Type locality: "Guinea."

10. AYGULA. p. 27.

Presbytis †.

No Linnean reference. Sole basis: "Osb. iter. 99" (= Osbeck,
Ostindisk Resa, p. 99, 1757).

Type locality: Java.

The species usually known as *P. mitratus* Eschsch. (see Thos.
& Wrought. P. Z. S. 1909, p. 373).

11. HAMADRYAS. p. 27.

Papio.

Linnean reference: Syst. Nat. (6) p. 3, no. 7, where the sole
reference is to Alp. Aegypt. p. 242, pls. xvii. & xviii.

Hamadryas Baboon.

Type locality: Egypt.

12. JACCHUS. p. 27.

Callithrix.

Linnean reference: Syst. Nat. (6) p. 3, no. 12, whence Cagui
minor, Marcgr. Bras. p. 227 (misquoted 228).

Common Marmoset.

Type locality: Pernambuco.

13. ŒDIPUS. p. 28.

Leontopithecus.

No Linnean reference. Sole basis: Edwards, Aves, iv. p. 195,
pl. 195, 1751.

Type specimen said to have been brought from "Vera Cruz, in
New Spain," but the species does not occur there.

* Notes Leyd. Mus. xx. p. 233, 1898.

† Dr. Elliot (Bull. Am. Mus. N. H. xxviii. p. 151, 1910) has recently pointed out that the name *Pygathrix*, based on *Simia nemæa*, antedates *Presbytis*, and should be used instead of it. But an examination of the skulls convinces me that *nemæa* and its close ally *nigripes* are, as Gray said, generically distinct from all the other Langurs, which would therefore retain the name *Presbytis*. The basal axis of the brain-case is set on to the facial bones at quite a different angle in the two genera,

14. ÆTHIOPS. p. 28.

Cercopithecus.

Linnean reference : Linn. in Hasselquist, Iter, p. 190, 1757.

Formerly known as *C. griseoviridis*.

See de Winton, in Anderson, Mamm. Egypt, p. 15, 1902.

Type locality : Upper Egypt.

15. MIDAS. p. 28.

Leontopithecus.

No Linnean quotation. First and primary reference :

Edwards, Aves, iv. p. 196, pl. 196, 1751.

Locality : "West Indies."

16. CYNAMOLGOS *. p. 28.

Papio.

Linnean references : Syst. Nat. (6) p. 3, no. 10 (ex Marcgr.

Bras. p. 227), and *Simia ægyptiaca*, Linn. in Hasselq. Iter, p. 189, 1757.

Both these references being Linnean, the one that refers to an actual specimen should be taken in preference to that merely based on Marcgrave's short and indefinite notice.

Consequently *Simia cynamolgus* becomes a synonym of *Papio hamadryas*.

Type locality : Upper Egypt.

17. APELLA. p. 28.

Cebus.

Linnean reference : Mus. Ad. Frid. p. 1, pl. i., 1754.

Cebus capucinus auctorum.

See Elliot, Bull. Am. Mus. N. H. xxvi. p. 227, 1909.

No type locality available, but Guiana may be accepted from later authors.

18. MORTA. p. 29.

Saimiri.

Sole basis : Seba, Thes. i. p. 52, pl. xxxiii. fig. 1, 1734.

Clearly a Squirrel-Monkey, but as the species is not determinable the name must lapse.

The suggestion that Surinam should be taken as a typical locality for Seba's animals cannot be adopted in this case, as the statement that *Simia morta* had the back of the head blackish is inconsistent with the condition found in the Guianan species.

19. CAPUCINA. p. 29.

Cebus.

Linnean reference : Mus. Ad. Frid. p. 2, pl. ii., 1754.

The monkey usually known as *C. hypoleucus* Humb.

See Elliot, Bull. Am. Mus. N. H. xxvi. p. 227, 1909.

No type locality available. The species is Central American and Colombian.

being far more strongly inclined in *Pygathrix*, in which, as a consequence, the posterior nares are of enormously greater height. Gray, following Dahlbohm, separated the two on external characters and the proportions of the fore and hind limbs, and my comparison of the skulls quite confirms his judgment in the matter.
 * Spelling altered to *cynomolgus* in 12th edition.

20. SCIUREA. p. 29.

Saimiri.

Linnean reference : Mus. Ad. Frid. i. p. 3, 1754.

Common Squirrel-Monkey.

The Guianan form, which agrees with the description, may be accepted as typical.

21. SYRICTHA. p. 29.

Macaca.

Linnean reference : Syst. Nat. (6) p. 3, no. 6 ; whence we get "Cercopithecus Luzon. minimus D. Camel," Petiver, Gazyophylacium, pl. xiii. fig. 11. No. 176 of Index.

This figure—although a ghastly travesty in itself—can be nothing but the one monkey found in Luzon, viz., *Macaca philippensis*, *philippinensis*, or *palpebrosus* auctorum, which names should give way to that of *M. syrichta*.Type locality : Luzon (probably Southern Luzon, whence Dr. Camel sent "*Lemur volans*").

Genus 3. LEMUR. p. 29.

Three species, no one with "Lemur" as a subsidiary name.

Type, *L. catta* ; *L. tardigradus* having been made the type of *Loris*, Geoff., 1796, and *L. volans* of *Cynocephalus*, Bodd., 1768 (= *Galeopithecus*, Pall., 1780).All authors have accepted *L. catta* as the type of *Lemur*.

Species :

1. TARDIGRADUS. p. 29.

Loris.

Linnean references : "Mus. Ad. Fr. i. p. 3 ; Syst. Nat. (6) p. 5 *, no. 2."

The specimen referred to in Mus. Ad. Frid. and redescribed in the 10th edition is still in the Stockholm Museum, and, as Dr. Lönnerberg informs me, is the Cinghalese Slender Loris. It may even have been the specimen figured by Seba, who is quoted in the 6th edition.

See also Thos. Ann. Mag. N. H. (8) i. p. 467, 1908, where the same conclusion is reached on the ordinary "Linnean reference" grounds.

Type locality : Ceylon.

2. CATTA. p. 30.

Lemur.

Sole basis : Simia—Sciurus madagascariensis, sive Maucauco, Edwards, Aves, 119, t. 199.

The Ring-tailed Lemur.

3. VOLANS. p. 30.

Cynocephalus.

References :—

Cato—Simius volans camelli, Pet.(iver), Gaz.(ophylacii Naturæ et Artis), t. 9. f. 8 (1702) ; Act. Angl. 277,

* Misprint for 3.

p. 1065 (= Phil. Trans. Roy. Soc. pt. 277, included in vol. xxiii. 1704).

Vespertilio admirabilis, Bont.(ius), Java, p. 68, 1658.

Felis volans ternatia, Seba, Mus. i. p. 93, t. 58. f. 2, 3.

The first is the primary and only vital reference, as the others refer to specimens from impossible localities (Guzerat and Ternate).

Petiver's type locality was Pampanga, Southern Luzon, and the animal therefore was that until recently known as *Galeopithecus* (or *Colugo*) *philippinensis*.

Cynocephalus, Boddaert, was based on "*Lemur volans* Linn.," and antedates *Galeopithecus* by many years.

See Thos. Ann. Mag. N. H. (8) i. p. 252, 1908.

Genus 4. VESPERTILIO. p. 31.

Seven species, of which no. 7, *murinus*, has among its synonyms *Vespertilio*, Bell. Av. 147; Gesn. Av. 694.

Therefore type by tautonymy: *Vespertilio murinus* L., the bat formerly known as *V. discolor*.

See Miller, Ann. Mag. N. H. (6) xx. p. 379, 1897.

Species:

1. VAMPIRUS. p. 31.

Pteropus.

Linnean reference: Syst. Nat. (6) p. 7, no. 1.

There the only reference is to

Canis volans ternatanus orientalis, Seba, Thes. i. p. 91; t. 57. f. 1, 2.

Pteropus edulis auctorum.

See Thos. P. Z. S. 1892, p. 316.

Type locality: Ternate. A co-type in British Museum.

2. SPECTRUM. p. 31.

Vampyrus.

Only reference: *Canis volans maxima aurita*, Seba, Thes. i. p. 92, t. 58. f. 1.

Species known rightly as *Vampyrus spectrum* L.

Suggested type locality: Surinam.

3. PERSPICILLATUS. p. 31.

Hemiderma.

Linnean references: Syst. Nat. (6) p. 7; Mus. Ad. Fr. i. p. 7.

The latter, as referring to an actual specimen, would take precedence, but the description is unrecognizable, and no specimen is now in existence, as Dr. Lönnberg informs me. We therefore take the single reference of the 6th edition:—*Vespertilio americanus vulgaris*, Seba, Thes. i. p. 90, t. 55. f. 2, of which the original specimen (B.M. no. 67.4.12.597) is the bat known until 1892 as *Hemiderma brevicauda*.

See Thos. P. Z. S. 1892, p. 316.

Suggested type locality: Surinam.

4. SPASMA. p. 32.

Megaderma.

The Linnean reference (Syst. Nat. (6) p. 7) refers alone to

Glis volans ternatanus, Seba, Thes. i. p. 90, p. 56. f. 1, which is the bat known as

Megaderma spasma.

See K. Anders. & Wrought. Ann. Mag. N. H. (7) xix. p. 132, 1907.

5. LEPORINUS. p. 32.

Noctilio.

Equally through Syst. Nat. (6) p. 7, the first Linnean reference, and Seba, pl. lv. fig. 1, we get to the correctly known

Noctilio leporinus.

Suggested type locality : Surinam.

6. AURITUS. p. 32.

Plecotus.

References : Frisch, Av. (Vögel Deutschlands) 103.

Edw. Av. t. 201. f. 3.

Olear. Mus. t. 15. f. 1.

The Long-eared Bat, *Plecotus auritus.*

Type locality, from Frisch : Germany (Berlin).

7. MURINUS. p. 32.

Vespertilio.

Linnean references : Faun. Suec. 18 : Syst. Nat. (6) p. 7, no. 2.

For reasons explaining why this should be considered as the bat formerly known as *Vespertilio* or *Vesperugo discolor*, see Miller, *l. c.*

Type locality : Sweden (Upsala).

Genus 5. ELEPHAS. p. 33.

Monotypic. Type, *E. maximus* (*E. indicus* auctorum).

Species :

MAXIMUS. p. 33.

Elephas.

Linnean reference : Syst. Nat. (6) p. 11, where the single quotation is to Ray, Quadr. p. 123 (131 in the Museum copy).

Ray gives a long account of the Elephant, but does not distinguish the two forms, nor give any locality. Linnæus, however, says "Habitat in Ceylonæ paludosis," whence

Type locality : Ceylon.

Genus 6. TRICHECHUS. p. 34.

Monotypic. Type, *T. manatus.*

Species :

MANATUS. p. 34.

Trichechus.

Linnean reference : Syst. Nat. (6) p. 39 (misprinted 37).

Single reference in 6th edition : Artedi, Synonym. 109 (misprinted 107).

Artedi here, again, gives a primary reference to his own 'Genera

Piscium,' no. li. p. 556, where we find a general account which includes both Manatees, American and African, and Dugongs. Linnaeus, however, puts "in mare americano" as locality, and this would fix the name on the common American species.

Type locality: West Indies.

Genus 7. BRADYPUS. p. 34.

Two species. Type by selection: *B. tridactylus*. Selected by Illiger, who at the same time eliminated *B. didactylus* as a *Cholæpus*.

Species:

1. TRIDACTYLUS. p. 34.

Bradypus.

First Linnaean reference: Syst. Nat. (6) p. 3.

Two references: Seba, Thes. i. t. 33. f. 2, and Maregr. Bras. 221, of which the first may be taken as primary.

Type locality (suggested): Surinam.

2. DIDACTYLUS. p. 35.

Cholæpus.

First Linnaean reference: Syst. Nat. (6) p. 3.

One reference only: Seba, Thes. i. t. 34.

Type locality (suggested): Surinam.

Genus 8. MYRMECOPHAGA. p. 35.

Three species. Type by elimination: *M. tridactyla*, *M. didactyla* having been taken out as *Cyclopes* and *M. tetradactyla* as *Tamandua*.

Species:

1. DIDACTYLA. p. 35.

Cyclopes.

Based on specimen. Fuller description Mus. Ad. Frid. p. 8.

No locality, but as an identification is made, through Syst. Nat. (6) p. 8, with Seba, pl. 37. fig. 3, we may take as the

Type locality: Surinam.

2. TRIDACTYLA. p. 35.

Myrmecophaga.

Linnaean reference: Syst. Nat. (6) p. 8, where we find "Ray, Quadr. 241. Maregr. bras. 225."

Ray's account simply refers to, and is based on, that given by Maregrave of the *Tamandua guacu*, the Great Anteater, of which he gives a recognizable figure.

The Great Anteater, commonly known as *Myrmecophaga jubata*, should therefore, as pointed out in 1901, be known as *M. tridactyla*.

Type locality: Pernambuco.

See Thos. American Naturalist, xxxv. p. 143, 1901.

3. TETRADACTYLA. p. 35.

Tamandua.

Linnean reference: Syst. Nat. (6) p. 8, which gives "Ray, quadr. 242. Marcgr. bras. 226."

Here, again, as in the last species, Ray simply refers back to Marcgrave, whose animal is the *Tamandua*.

Hence the common name *Tamandua tetradactyla* is correct.

Type locality: Pernambuco.

Genus 9. MAXIS. p. 36.

Monotypic. Type, *M. pentadactyla*.

Species:

PENTADACTYLA. p. 36.

Manis.

Linnean reference: Syst. Nat. (6) p. 8, where four quotations are given:—

Bontius, Ind. 60 (1658).

Clus. exot. 347.

Olear. Mus. 8, t. 7. f. 1.

Ray, Quadr. 247.

Of these, Bontius, as being the first quoted, should be taken; and here we find the actual locality mentioned, namely, Tajoan = Tai-wan = Formosa.

On this account the species which has ordinarily borne the name of *M. dalmani* Sund., should be considered as the true *M. pentadactyla* of Linnæus.

Moreover, Linnæus also includes in his synonymy Dalman's paper (Act. Stockh. 1749, p. 265) on a Pangolin from China or Formosa; and as he must have seen the specimen when he gave the name *pentadactyla*, the propriety of the above identification is confirmed.

Type locality: Formosa.

Genus 10. PHOCA. p. 37.

Four species. Type by tautonymy: *Ph. vitulina* ("Phoca seu Vitulus marinus," Gesner).

Species:

1. URSINA. p. 37.

Callorhinus.

Sole reference: Steller, Nov. Comm. Petrop. ii. p. 331 (1751).

The Fur-Seal, commonly known as *Callorhinus ursinus*.

Type locality: Bering Island.

2. LEONINA. p. 37.

Mirounga.

Sole reference: Anson, Itin. p. 100.

Sea-Lion.

Type locality: Juan Fernandez.

3. ROSMARUS. p. 38.

Odobenus.

Linnean quotation: Syst. Nat. (6) p. 6, no. 2 (misprinted 8).

Correctly known as *Odobenus rosmarus* (not *Odobenus*, if Brisson is taken as the founder of the generic name).

Type locality: Northern Atlantic.

4. VITULINA. p. 38.

Phoca.

Linnean reference: Syst. Nat. (6) p. 6, no. 1, which refers again to Fauna Suecica, no. 11 (p. 4).

Common Seal.

Type locality: "in Mari Bothnico et Baltico."

Genus 11. CANIS. p. 38.

Seven species. Type by tautonymy: *Canis familiaris*, among whose synonyms there appears "*Canis* Gesner."

Species:

1. FAMILIARIS. p. 38.

Canis.

Linnean references: Faun. Suec. no. 12; Syst. Nat. (6) p. 5.

Type locality: Sweden (Upsala).

2. LUPUS. p. 39.

Canis.

Linnean references: Faun. Suec. no. 13; Syst. Nat. (6) p. 5.

Type locality: Sweden.

3. HYÆNA. p. 40.

Hyæna.

Linnean reference: Syst. Nat. (6) p. 5, where the single reference is to Kæmpf. Amœn. p. 407, fig. 4 (letterpress on p. 411).

The animal commonly called *Hyæna striata*, but whose proper name is *Hyæna hyæna*.

Type locality: Benná Mts., Laristan, S. Persia. Kæmpfer also mentions a specimen from Isfahan.

4. VULPES. p. 40.

Vulpes.

Linnean reference: Syst. Nat. (6) p. 5, no. 6.

Correct name: *Vulpes vulpes*.

Type locality: Sweden (Upsala).

5. ALOPEX. p. 40.

(Vulpes.)

Linnean reference: Syst. Nat. (6) p. 5, no. 5, where the whole entry is

"Canis cauda recta extremitate nigra Gmel. Vulpes campestris."

I cannot identify this animal. It has been supposed to be an individual variety of *V. vulpes*, which Blanford (P. Z. S. 1887, p. 635) proposed should bear the name *V. alopes*.

6. LAGOPUS. p. 40.

Alopex.

Linnean reference: Syst. Nat. (6) p. 5, where *V. alba* and *V. cærulescens* are quoted from Kalm and the 'Fauna Suecica.'

Arctic Fox.

Type locality: Sweden (Lapland).

7. AUREUS. p. 40.

Canis.

No Linnean reference, that to the 6th edition being omitted.

However, the first reference, Kæmpf. Amœn. p. 413, fig. 3, is the one quoted in that edition, p. 5, no. 5.

Jackal.

Type locality: Bennâ Mts., Laristan, S. Persia.

Genus 12. FELIS. p. 41.

Seven species. Type by tautonymy: *Felis catus* ("Felis" Aldr.).

Species:

1. LEO. p. 41.

Felis.

Linnean reference: Syst. Nat. (6) p. 4, no. 1, where the quotation runs "Leo. Dod. gall. t. 1 & 17." The plate 1 referred to appears to be that in Mém. Acad. Sci. Paris, iii. 1666-1699, p. 1, pl. i., publ. 1733, where there is an account of the dissection of four lions and three lionesses.

No type locality available.

2. TIGRIS. p. 41.

Felis.

Linnean reference: Syst. Nat. (6) p. 4, no. 2, where two quotations are given:—

Ray, Quadr. p. 165; Bont. Jav. p. 53.

Taking the first of these, we find a description which mixes up the Jaguar with the Tiger, but Linné's "Habitat in Asia" may be taken as restricting the name to the Tiger.

Later revisers of the races of Tigers, of whom Fitzinger and Matschie may be specially quoted, have restricted *F. tigris* to India proper, and particularly Bengal.

3. PARDUS. p. 41.

Felis.

Linnean reference: Syst. Nat. (6) p. 4, no. 3, where we find Ray, Quadr. p. 166, and Alp. Aegypt. p. 237.

Ray gives no indication of locality, but passing to Alpinus we find an account of Leopards seen at Cairo and Alexandria alive in captivity. The account is, no doubt, partly based on Hunting Leopards (*Cynelurus*), but, none the less, may be accepted as giving for the

Type locality: Egypt.

It may be here reiterated that Linné's "in Indiis" cannot be taken to mean India in the modern sense, but means hardly more than "from abroad." In this case, he gives a synonymy based on African and Mexican references, and then simply puts "Habitat in Indiis."

4. ONCA. p. 42.

Felis.

First reference: Ray, Quadr. p. 168; and this in turn is based primarily on Marcgrave's account of the Jaguar.

Consequently

Type locality: Pernambuco.

5. PARDALIS. p. 42.

Felis.

Linnean reference: Syst. Nat. (6) p. 4, no. 4, where the only citation is

"Catus pardus, Hernandez, Mex. p. 512."

Ocelot.

Type locality: Mexico.

Linnaeus also saw and described as the same species a living specimen "*in Vivario cliffortiano*," but there is nothing in this description inconsistent with the taking of the Mexican Ocelot as the typical form.

6. CATUS. p. 42.

Felis.

Linnean references: Faun. Suecica, no. 3; Syst. Nat. (6) p. 4, no. 6.

Clearly the "Blotched Tabby" Domestic Cat.

See Pocock, P. Z. S. 1907, p. 149.

Type locality: Upsala.

7. LYNX. p. 43.

Lynx.

Linnean references: Faun. Suecica, no. 4; Syst. Nat. (6) p. 4, no. 7; It. Wgoth. p. 222.

North European Lynx.

Type locality: Wenneborsborg, S. Sweden. (From the first mention in the Westgotha Resa.)

Genus 13. VIVERRA. p. 43.

Five species.

Type, both by elimination and selection: *V. zibetha*.

Species:

1. ICHNEUMON. p. 43.

Mungos.

Linnean references: Linn. in Hasselq. Itin. p. 191, 1757, and Syst. Nat. (6) p. 6, no. 3.

Common Mongoose.

Type locality: Egypt.

2. MEMPHITIS. p. 44.

(?)

No Linnean reference.

"Ysquepatl, Hern. Mex. 332; Seb. Mus. i. p. 68, pl. xlii.
fig. 1; Rai, quadr. p. 181."

It does not seem possible to determine to what animal this name should be applied. Hernandez gives a figure which has a superficial resemblance to a Tayra, but the description of the tail is quite inconsistent with this idea, and is applicable rather to a Skunk or *Bassariscus*. Seba's animal was probably a *Nasua*.

Linnaeus himself says in one place that the colour is brown above and yellowish below, and in another that it is white above and variegated black and white below, an inconsistency which justifies one in treating the name as unrecognizable.

3. PUTORIUS. p. 44.

Spilogale.

No Linnean reference.

"Putorius americanus striatus, Catesb. Carol. ii. p. 62."

Alleghenian Spotted Skunk.

Type locality: South Carolina.

See Howell, N. Am. Faun. no. 26, pp. 15-17, 1906.

4. ZIBETHA. p. 44.

Viverra.

No Linnean references, that in the 6th edition, p. 6 (Meles, no. 2), being omitted in the 10th. It quotes "Ray, Quadr. 178; Dod. gall. 155."

General references to Clusius, Ray, Dodart, Hernandez, Olearius, and Beltonius.

From the name *zibetha* we may take the "Animal zibethicum" of Ray, Dodart, Hernandez, and Olearius as the primary reference, and of these we should take the first in Ray, who is also the first quoted in the omitted 6th edition reference.

Turning to Ray we find he quotes the description by Faber in Hernandez, Nov. Hispan. pp. 538, 580, and 581 (also quoted by Linnaeus). Taking, again, the first of these we find an animal described which has a ringed tail, and would therefore be an Indian Civet. The illustration does not show the rings properly, but they are sufficiently indicated in the description. All the other references are to the African *V. civetta*.

Type locality (from Faber): Bengal.

5. GENETTA. p. 45.

Genetta.

No Linnean reference.

"Genetta s. Ginetta, Rai, quadr. 201. Bell. itin. 76. Gesn. quadr. 550."

The first reference in Ray being to Spain, that may be taken as the type locality, especially as the basis of the name (Gineta) remains as the Spanish colloquial term for the animal.

Genus 14. MUSTELA. p. 45.

Nine species.

Type by tautonymy: *M. erminea* ("Mustela" Gesner; misquoted *Mustela vulgaris*).

Although in this instance alone of the Gesner quotations of the 'Systema' a second name is attached to the primary one, for which tautonymy is claimed, this proves to be a misquotation by Linnæus, and the correct quotations seem actually to strengthen the case for the Ermine being really the typical tautonymous species. For though Linnæus quotes "*Mustela vulgaris*, Gesner," we find, as a matter of fact, that Gesner* did not put *Mustela vulgaris*, but simply "*Mustela*" in the German edition (that quoted in the 1758 'Systema') and in the Latin one "*Mustela proprie sic dicta*," in contradistinction to his "*Mustelis diversis*," which included the Marten and Polecat.

The Ermine was therefore clearly *the* Mustela of both Gesner and Linnæus, and should be treated as the type species.

Species:

1. LUTRIS. p. 45.

Lutax.

No Linnean reference.

Lutra marina, Act. Petrop. 1749, p. 267, i. e. Steller, Nov. Comm. Petrop. ii. p. 367 (1751).

Lutra brasiliensis, Rai, quadr. p. "187" (189).

The primary reference is clearly to Steller, and the type locality Kamtchatka.

2. LUTRA. p. 45.

Lutra.

Linnean reference: Faun. Suecica, no. 10.

European Otter.

Type locality: Upsala.

3. GULO. p. 45.

Gulo.

Linnean reference: Faun. Suecica, no. 6.

Glutton.

"Habitat in alpinibus Lapponicis, Dalekarlicis, sylvisque vastissimis."

Taking the first place mentioned we have

Type locality: Lapland.

4. BARBARA. p. 46.

Tayra.

Tayra, by description.

"Habitat in Brasilia, M. Ac. Holmens."

* The pagination of Gesner quoted by Linnæus is somewhat confusing. While, in the majority of cases (e. g., the *Putorius*), the pages are quoted from the 1620 Latin edition, the "*Martes*" and the "*Mustela vulgaris*" are given as "151" and "149," these pages coming from the German edition of 1606. Their respective numbers in the 2nd Latin edition (1620) are 764 and 752, and in the original edition (1551) 865 and 851.

5. MARTES. p. 46.

Martes.

Linnean references: Faun. Suecica, no. "3" (7); Syst. Nat. (6) p. 5, no. 2.

Pine Marten.

Type locality: Upsala.

6. PUTORIUS. p. 46.

Mustela.

Linnean references: Faun. Suecica, no. 8; Syst. Nat. (6) p. 5, no. 3.

Polecat.

Type locality: Scania, S. Sweden.

7. FURO. p. 46.

Mustela.

No Linnean reference.

"*Mustela sylvestris*, *Viverra dicta*, Rai, quadr. 199."

Ferret.

"Said to be from Africa."

8. ZIBELLINA. p. 46.

Martes.

No Linnean reference.

"*Mustela s(z)ibellina*, Rai, quadr. p. 201."

Sable.

Type locality: N. Asia.

9. ERMINEA. p. 46.

Mustela.

No Linnean reference.

"*Mustela vulgaris*, Gesn. quadr. 149" (German edition).

Stoat or Ermine.

Type locality: "In unseren Landen" (Germany).

Genus 15. URSUS. p. 47.

Four species. Type by tautonymy: *U. arctos* ("Ursus, Gesner").

Species:

1. ARCTOS. p. 47.

Ursus.

Linnean references: Faun. Suecica, no. 2; Syst. Nat. (6) p. 4, no. 1.

European Brown Bear.

Type locality (ex Faun. Suec.): Northern Sweden.

2. LUSCUS. p. 47.

Gulo.

No Linnean reference.

Ursulus lupo affinis americanus, Edw. av. ii. p. 103, t. 103, 1747.

American Glutton.

Type locality: Hudson's Bay.

3. MELES. p. 48.

Meles.

Linnean references : Faun. Suec. no. 15 ; Syst. Nat. (6) p. 6.

European Badger.

Type locality : Upsala.

4. LOTOR. p. 48.

Procyon.

Linnean references : Syst. Nat. (6) p. 4 ; Act. Stockh. 1747, t. 9. f. 1 (p. 277 & seqq.).

Although in the last-named place Linnæus refers to earlier accounts, yet his description of an actual specimen, whose habit, as mentioned by him (p. 282), of dipping its food in water would have suggested the name *lotor*, should override his synonymy. His statement that the Raccoon is called Ispan by the Swedes in Pennsylvania may be accepted as defining the locality of his animal. Therefore

Type locality : Pennsylvania.

Genus 16. SUS. p. 49.

Four species. Type by tautonymy : *Sus scrofa* ("Sus, Gesn.").

Species :

1. SCROFA. p. 49.

Sus.

Linnean references : Faun. Suec. no. 36 ; Syst. Nat. (6) p. 12.

European Wild Swine.

Type locality : Germany, whence the wild specimens referred to by Linnæus were introduced * into the island of Oeland.

2. PORCUS. p. 50.

Potamochoerus.

Linnean reference : Syst. Nat. (6) p. 12.

Refers to "Rai, quadr. 96," where a further reference is given to Marcgrave's *Porcus guineensis*, whose description is clearly that of the West-African River-Hog.

Type locality : Guinea.

3. TAJACU. p. 50.

Tayassu.

Linnean reference : Syst. Nat. (6) p. 12, no. 3.

Here the only quotation is Ray (Quadr. p. 97), who in turn gives primary importance to Tyson's description (Phil. Trans. Roy. Soc. xiii. p. 359, 1683) of what he calls a Mexican Musk-Hog. We may therefore consider the

Type locality : Mexico.

4. BABYRUSSA. p. 50.

Babirusa.

Linnean reference : Syst. Nat. (6) p. 12, no. 4, where we find two quotations : Ray, Quadr. p. 96, and Seba, Thes. i. p. 80, pl. 1. figs. 2 & 3.

Babirusa.

Type locality (from both Ray and Seba) : "Island of Boero."

* See Lilljeborg, Sver. Rygg. Daggdj. pt. ii. p. 761, 1874.

Genus 17. *DASYPUS*. p. 50.

Six species. Type by tautonymy: *D. novemcinctus* ("Dasypus, Hern.?).

Apart from the difficult and doubtful case of *Simia*, this is the only instance in which the use of tautonymy in selecting Linnean types brings out a result contrary to common use.

Linneus placed the name "*Dasypus*" among the synonyms of *D. novemcinctus* alone, and the account in Hernandez from which this name comes is clearly that of one of the group long known as *Tatusia*, more recently as *Tatu*.

The comparatively recent date of the latter change, the extreme ugliness of *Tatu*, which antedates *Tatusia*, and the classical suitability of *Euphractus*, which stands for *sexcinctus* and its allies, will all help to reconcile us to the shifting of *Dasypus* from one group to another.

This shifting is quite unavoidable, if the invaluable principle of tautonymy is to be utilized at all.

Species :

1. *UNICINCTUS*. p. 50.*Cabassous*.

Linnean reference : Syst. Nat. (6) p. 6, no. 4, where the sole reference is to Seba, Mus. i. p. 47, pl. xxx. figs. 3 & 4.

This, or at least fig. 3 (fig. 4 being more doubtful), is clearly the Tatouay or Twelve-banded Armadillo.

No original locality available, but being from Seba, Surinam may be suggested, if *Cabassous* occurs there, which is not as yet certainly known.

2. *TRICINCTUS*. p. 51.*Tolypeutes*.

Linnean reference : Syst. Nat. (6) p. 6, no. 2, where the sole quotation is to Seba, i. p. 62, pl. xxxviii. figs. 2-3.

Seba's animal is a typical Three-banded Armadillo.

Suggested type locality : Surinam.

3. *QUADRICINCTUS*. p. 51.*Tolypeutes*.

Linnean reference : Syst. Nat. (6) p. 6, no. 3, where the single quotation is to "Column. aquat. ii. p. 15. pl. xvi." (1606).

Colonna's animal is a four-banded specimen of *Tolypeutes tricinctus*, of which *D. quadricinctus* is therefore a synonym.

4. *SEXCINCTUS*. p. 51.*Euphractus*.

Linnean references : Mus. Ad. Frid. p. 7 (1754), and Syst. Nat. (6) p. 6, no. 5.

The former takes precedence, as being based on a specimen, whatever the reference to Ray in the latter might lead to.

Six-banded Armadillo.

Type specimen in Stockholm Museum, its locality unknown. But Para specimens agree with it in size, and may be provisionally accepted as typical (cf. P. Z. S. 1903, ii. p. 242).

5. SEPTEMCINCTUS. p. 51.

Dasypus (= *Tatu* auct.).

Linnean references: Amœn. Acad. i. p. 281, and Syst. Nat.

(6) p. 6, no. 6; but in the latter we are again referred to the former. Thus the synonymy may be excluded and primary importance given to the species described. This is said to be still in the Upsala Museum.

Seven-banded Armadillo.

Type locality not known.

6. NOVEMCINCTUS. p. 51.

Dasypus.

Linnean references: Mus. Ad. Frid. p. 6, and Syst. Nat. (6)

p. 6, no. 7, but in the latter no further detail is added and we must take the former alone.

Nine-banded Armadillo.

Prof. Einar Lönnberg informs me that the type specimen is still preserved in the Stockholm Museum, and this will need expert examination whenever an attempt is made to work out the present difficult group.

Genus 18. ERINACEUS. p. 52.

Monotypic. Type, *E. europæus*.

Species:

EUROPÆUS. p. 52.

Erinaceus.

Linnean references to Fauna Suecica, Syst. Nat. (6), and Iter Goth.

Common Hedgehog.

Type locality (from the Gothländska Resa, p. 264): Wamlingbo, S. Gothland Id.

Genus 19. TALPA. p. 52.

Two species. Type by tautonymy: *T. europæa* ("Talpa, Gesn.").

Species:

1. EUROPÆA. p. 52.

Talpa.

Linnean references to Syst. Nat. (6), Fauna Suecica, and Iter Scanicum.

Common Mole.

Type locality: Upsala*.

2. ASIATICA. p. 53.

Chrysochloris.

Sole reference: Seba, Mus. i. p. 51, pl. xxxii. figs. 4, 5.

Cape Golden Mole.

Type specimen in British Museum (Lidth de Jeude Coll.), B.M. No. 67.4.12.564 (see P. Z. S. 1892, p. 316).

* The 'Skånska Resa' being later in date than the 'Fauna Suecica,' one cannot justifiably fix a type locality from it when the ordinary Upsalan locality is available from the latter work.

Genus 20. SOREX. p. 53.

Three species. Type by tautonymy: *S. araneus* ("Sorex, Faun. Suec.").

Species:

1. ARANEUS. p. 53.

Sorex.

Linnean references: Faun. Suec. no. 33; Syst. Nat. (6) p. 10.

Common Shrew.

Type locality: Upsala.

2. CRISTATUS. p. 53.

Condylura.

Sole reference: P. Kalm.

Type locality: Pennsylvania.

3. AQUATICUS. p. 53.

Scalops.

Reference to Seba (pl. xxxii. fig. 3), whose figure is of *Talpa europæa*, but the description is clearly that of an American Mole, and was no doubt received from Kalm, who is quoted as authority for the locality.

Common American Mole.

Type locality: Philadelphia.

Genus 21. DIDELPHIS. p. 54.

Five species. Type by selection and elimination: *D. marsupialis*.

Species:

1. MARSUPIALIS. p. 54.

Didelphis.

Linnean references: Amœn. Acad. i. p. 279; Syst. Nat. (6) p. 10; Mus. Ad. Fr. p. 10.

In the first of these places the primary, and in the others the sole reference is to Seba, Mus. i. p. 64, pl. xxxix., which should be taken as the basis of the name.

Suggested type locality: Surinam.

2. PHILANDER. p. 54.

Caluromys.

Sole reference: Seba, Mus. i. p. 57, pl. xxxvi. fig. 4.

Philander Opossum.

Type specimen in British Museum, No. 67.4.12.414 (see P.Z.S. 1892, p. 314).

Suggested type locality: Surinam.

3. OPOSSUM. p. 55.

Metachirus.

Sole reference: Seba, Mus. i. p. 56, pl. xxxvi. figs. 1-2.

Quica Opossum.

Suggested type locality: Surinam.

4. MURINA. p. 55.

Marmosa.

Linnean reference: Amœn. Acad. i. p. 279.—This is an error, the only Opossum referred to being the large *Didelphis marsupialis*.

Second reference: Seba, Mus. i. p. 48, pl. xxxi. figs. 1-2, which must be taken as the basis of the name.

Murine Opossum.

Co-types in British Museum, Nos. 67.4.12.541-542 (see P. Z. S. 1892, p. 314).

Suggested type locality: Surinam.

5. DORSIGERA. p. 55.

Marmosa.

Primary reference to Seba, Mus. i. p. 49, pl. xxxi. fig. 5.

Synonym of *Marmosa murina*.

Type in British Museum, No. 67.4.12.546.

Suggested type locality: Surinam.

Genus 22. RHINOCEROS. p. 56.

Two species. Type by tautonymy: *R. unicornis* ("Rhinoceros, Jonst.").

Species:

1. UNICORNIS. p. 56.

Rhinoceros.

Linnean reference: Syst. Nat. (6) p. 11, no. 1.

One-horned Indian Rhinoceros.

From Jonston's 'Quadrupeds' (p. 67, 1657), the first work quoted in the 10th edition, we get the

Type locality: Bengal.

2. BICORNIS. p. 56.

Diceros.

Linnean reference: Syst. Nat. (6) p. 11, no. 2, where no further quotation is given.

Always accepted as the African Two-horned Rhinoceros.

Type locality not determinable, except that the Cape may generally be considered the place whence early specimens were brought. "Habitat in India" may, as usual, be entirely ignored.

Genus 23. HYSTRIX. p. 56.

Five species. Type by tautonymy: *H. cristata* ("Hystrix, Gesn.").

Species:

1. CRISTATA. p. 56.

Hystrix.

Linnean reference: Syst. Nat. (6) p. 9, no. 1, where the first quotation is to Ray (Quadr. p. 206), whence we find

Type locality: Rome.

Common Porcupine.

2. PREHENSILIS. p. 57.

Coendou.

Linnean reference: Syst. Nat. (6) p. 9, no. 2, where the only quotation is to Ray (Quadr. p. 208). There we get an account taken from Marcgrave, whence

Type locality: Pernambuco.

Brazilian Porcupine.

3. DORSATA. p. 57.

Erethizon.

Sole reference: Edw. Aves, p. 52, pl. lii.

Canadian Porcupine.

Type locality: Hudson's Bay.

4. MACROURA. p. 57.

Atherurus.

Linnean reference: Syst. Nat. (6) p. 2, no. 3, where the sole quotation is Seba, Thes. i. p. 84, pl. lii, fig. 1.

Common Brush-tailed Porcupine.

No type locality available.

5. BRACHYURA. p. 57.

Acanthion.

Linnean reference: Syst. Nat. (6) p. 9, no. 4, where the sole quotation is Seba, Thes. i. p. 81, pl. li, fig. 1.

Malay Porcupine.

Type locality: Malacca.

See Lyon, P. U.S. Nat. Mus. xxxii. p. 579, 1907.

Genus 24. LEPUS. p. 57.

Four species. Type by tautonymy: *L. timidus* ("Lepus, Gesn.").

Species:

1. TIMIDUS. p. 57.

Lepus.

Linnean references: Syst. Nat. (6) p. 9, no. 2; Faun. Suec. no. 19.

Variable Hare.

Type locality: Sweden (Upsala).

2. CUNICULUS. p. 58.

Oryctolagus.

Linnean references: Syst. Nat. (6) p. 9, no. 3; Faun. Suec. no. 20.

In the former a reference is again given to the latter.

Clearly based on the Domestic Rabbit ("pupillis rubris").

Later on Linnæus became acquainted with the Wild Rabbit, and stated in the 10th edition:—

"*Habitat in Europa australi.*"

3. CAPENSIS. p. 58.

Lepus.

Common Cape Hare.

Type locality: Cape of Good Hope.

I have considered the question as to whether this might not be

a Rooi-haas (*Pronolagus*), but think the length of the tail too great, while in any case the evidence is insufficient to upset the usually accepted determination.

4. BRASILIENSIS. p. 58.

Sylvilagus.

Linnean reference: Syst. Nat. (6) p. 9, no. 1, where the sole quotation is Ray, p. 205, whose account is taken from Marcgrave.

Hence

Type locality: Pernambuco.

Genus 25. CASTOR. p. 58.

Two species. Type by tautonymy: *C. fiber* ("Castor, Gesn.")'

Species:

1. FIBER. p. 58.

Castor.

Linnean references: Faun. Suec. no. 23; Syst. Nat. (6) p. 10, no. 1.

In the latter the only reference is to the former, in which we find

Type locality: Lapland.

2. MOSCHATUS. p. 59.

Desmana.

Linnean references: Faun. Suec. no. 24; Syst. Nat. (6) p. 10, no. 2.

Type locality: Russia.

Genus 26. MUS. p. 59.

Sixteen species. Type by tautonymy: *M. musculus* ("Mus, Gesn.").

Species:

1. PORCELLUS. p. 59.

Cavia.

Linnean references: Westgoth. Resa, p. 244 (misprinted 224); Syst. Nat. (6) p. 10, no. 1.

Domesticated Cavy.

2. LEPORINUS. p. 59.

Dasyprocta.

Sole reference: Catesby, Carol. iii. (i. e. ii. Appendix) p. 18, pl. xviii.

An indeterminable species of *Dasyprocta*. Tail too short and size too large for *Myoprocta*.

No type locality available.

3. LEMMUS. p. 59.

Lemmus.

Linnean references to Fauna Suecica and Syst. Nat. (6), as well as to Act. Stockh. 1740, p. 320, pl. vi. figs. 4 & 5, where Linnæus gives an account of the Norway Lemming.

Type locality: Lapland.

4. MARMOTA. p. 60.

Marmota.

Linnean reference: Syst. Nat. (6) p. 10, no. 11, where the sole quotation is Ray, p. 221.

Alpine Marmot.

Type locality: Swiss Alps.

5. MONAX. p. 60.

Marmota.

Sole reference: Edwards, Aves, p. 104, pl. cv.

Woodchuck.

Type locality: Maryland.

6. CRICETUS. p. 60.

Cricetus.

Linnean reference: Syst. Nat. (6) p. 10, no. 10, where the sole quotation is Ray, p. 221.

"In Turingia and Misnia reperitur"—consequently

Type locality: Thüringen.

Common Hamster.

7. TERRESTRIS. p. 61.

Arvicola.

Linnean references: Faun. Suec. no. 29; Syst. Nat. (6) p. 10, no. 5.

Swedish Water-Vole.

Type locality: Upsala.

8. AMPHIBIUS. p. 61.

Arvicola.

Primary reference: Ray, Quadr. p. 217.

Ray's account is quoted from Willughby, and, as both were Englishmen, the animal should be taken as the British Water-Vole.

Type locality: England.

9. RATTUS. p. 61.

Epimys.

Linnean references: Faun. Suec. no. 28; Syst. Nat. (6) p. 10, no. 6.

Black Rat.

Type locality: Sweden (Upsala).

10. MUSCULUS. p. 62.

Mus.

Linnean references: Faun. Suec. no. 31; Syst. Nat. (6) p. 10, no. 8.

House-Mouse.

Type locality: Sweden (Upsala).

11. AVELLANARIUS. p. 62.

Muscardinus.

Linnean reference: Faun. Suec. no. 32.

Dormouse.

Type locality: Sweden (Upsala).

12. SYLVATICUS. p. 62.

Apodemus.

Linnean references: Faun. Suec. no. 30; Syst. Nat. (6) p. 10, no. 7.

Long-tailed Field-Mouse.

Type locality: Sweden (Upsala).

13. STRIATUS. p. 62.

Arvicanthis.

Linnean reference: Mus. Ad. Frid. p. 10.

The punctated white lines described indicate that this mouse is the species usually known as *Arvicanthis pulchellus* Gray. Having been brought in a ship coming from "India," its locality is no doubt that part of W. Africa where such a ship would have touched. Consequently we may consider its

Type locality: Sierra Leone.

14. LONGIPES. p. 62.

Allactaga.

Linnean reference: Mus. Ad. Frid. p. 9.

A five-toed Jerboa, not specifically determinable without examination of the type, if one exists.

15. JACULUS. p. 63.

Jaculus.

References: Linn. in Hasselq. Itin. p. 198; Act. Stockh. 1752, p. 123.

Lesser Egyptian Jerboa.

Type locality: Lower Egypt.

16. VOLANS. p. 63.

Sciuropterus.

Primary reference: Ray, Quadr. p. 215, whence we get

Type locality: Virginia.

American Flying-Squirrel.

Other references are given to Seba, who figures a young *Petaurista*, and Edwards, whose animal was drawn from a living specimen brought from N. America.

Genus 27. SCIURUS. p. 63.

Seven species. Type by tautonymy: *S. vulgaris* ("Sciurus, Gesn.").

Species:

1. VULGARIS. p. 63.

Sciurus.

Linnean references: Faun. Suec. no. 21; Syst. Nat. (6) p. 9, no. 1.

Common Squirrel.

Type locality: Sweden (Upsala).

2. NIGER. p. 64.

Sole reference: Catesby, Carolina, ii. pl. lxxiii.

Southern Fox-Squirrel.

Type locality: Carolina. Considered by Bangs to be Southern South Carolina.

See Bangs, P. Biol. Soc. Wash. x. p. 147, 1896.

3. CINEREUS. p. 64.

Sciurus.

References: Ray, Quadr. p. 215; Catesby, Carolina, ii. p. 74, pl. lxxiv.; Kahn. Itin. ii. p. 409.

Ray's account is short and unimportant, and Catesby's is clearly the primary one. Mr. Bangs has allocated Catesby's animal to the Southern Fox-Squirrel (*Sciurus niger*) in his work on Eastern N.-American Squirrels, and his determination may be accepted.

Type locality: coast region of Carolina.

4. FLAVUS. p. 64.

Linnean and sole reference: Amœn. Acad. i. p. 281.

"Habitat in America."

Indeterminable, except by reference to the type, if one exists.

In the 12th edition, Carthagera is added as the locality, but on what grounds does not appear.

5. GETULUS. p. 64.

Atlantoxerus.

References: Ray, Quadr. p. 216; Edwards, Aves, pl. 198; Seba, Mus. i. p. 76, pl. xlvii. fig. 3.

The first two both refer to the Barbary Squirrel, and the third, which is a Chipmunk, may be ignored.

Type locality: Barbary.

6. STRIATUS. p. 64.

Tamias.

Linnean reference: Mus. Ad. Frid. p. 8, where a quotation is given of Catesby, Carolina, ii. pl. lxxv.

Common Eastern Chipmunk.

Type locality: "Virginia and Carolina."

7. VOLANS. p. 64.

Sciuropterus.

Linnean references: Faun. Suec. no. 22; Syst. Nat. (6) p. 9.

Northern Flying Squirrel, *Sciuropterus ruscicus*, the name *volans* being already used (from *Mus volans* L.) in the genus.

Type locality: Finland.

Genus 28. CAMELUS. p. 65.

Four species, of which two, *C. dromedarius* and *bactrianus*, have "Camelus" among their synonyms.

Type by tautonymy and elimination: *C. bactrianus* *.

* Cf. 'Opinions of Nomenclature Commissioners,' 1910, p. 37.

Species :

1. DROMEDARIUS. p. 65. *Camelus.*

Linnean reference : Syst. Nat. (6) p. 13, no. 1, where the sole quotation is of Ray, p. 143.

One-humped Camel.

Type locality : " deserts of Libya and Arabia " (Ray).

2. BACTRIANUS. p. 65. *Camelus.*

Linnean reference : Syst. Nat. (6) p. 13, no. 2.

Two-humped Camel.

Type locality : " Bactria."

3. GLAMA. p. 65. *Lama.*

Linnean reference : Syst. Nat. (6) p. 13, no. 3, where the sole quotation is of Ray, p. 145.

Llama.

Type locality : Peru.

4. PACOS. p. 66. *Lama.*

Linnean reference : Syst. Nat. (6) p. 13, no. 4, where Ray (p. 147) is again alone quoted.

Alpaca.

Type locality : Peru.

Genus 29. MOSCHUS. p. 66.

Monotypic.

Species :

1. MOSCHIFERUS. *Moschus.*

Linnean reference : Syst. Nat. (6) p. 13, where Ray is alone quoted.

Type locality (from Linnæus) : " Tataria versus Chinam."

Genus 30. CERVUS. p. 66.

Eight species. Type by tautonymy : *C. elaphus* (" Cervus, Gesn").

Species :

1. CAMELOPARDALIS. *Giraffa.*

Linnean reference : Syst. Nat. (6) p. 13, no. 1, where references are given to Bellonius (Obs. ii. p. 119) and Ray, the latter of whom merely quotes the former.

Giraffe.

Type locality : Egypt (seen in captivity at Cairo).

2. *ALCES.* p. 66.*Alces.*

Linnean references: *Syst. Nat.* (6) p. 13, no. 2; *Faun. Suec.* no. 37.

Elk.

Type locality: Sweden.

3. *ELAPHUS.* p. 67.*Cervus.*

Linnean references: *Faun. Suec.* no. 38; *Syst. Nat.* (6) p. 13, no. 3.

Red Deer.

Type locality: Sweden.

4. *TARANDUS.* p. 67.*Rangifer.*

Linnean references: *Faun. Suec.* no. 39; *Syst. Nat.* (6) p. 13, no. 4.

Reindeer.

Type locality: Lapland.

5. *DAMA.* p. 67.*Cervus.*

Linnean references: *Faun. Suec.* no. 40; *Syst. Nat.* (6) p. 13, no. 5.

Fallow Deer.

“Habitat in vivariis Regis & Magnatum.”

6. *BEZOARTICUS.* p. 67.*Blastocerus.*

References:

Mazama, Hern. mex. p. 324.

Cugnacu-ete, Maregr. Bras. p. 235; Piso, Bras. p. 98; Ray, *Quadr.* p. 90.

Linnean diagnosis taken from Maregrave, whose account should therefore be selected as the primary reference.

Pampas Deer (*Cariacus campestris* auctorum).

Type locality: Pernambuco.

See Lydekker, ‘Deer of all Lands,’ p. 287.

7. *CAPREOLUS.* p. 68.*Capreolus.*

Linnean references: *Faun. Suec.* no. 41; *Syst. Nat.* (6) p. 13, no. 6.

Roe-Deer.

Type locality: Sweden.

8. *GUINEENSIS.* p. 68.

(?)

Linnean reference: *Mus. Ad. Frid.* i, p. 12.

Hab. Guinea.

Not as yet identified.

Genus 31. CAPRA. p. 68.

Twelve species. Type by tautonymy: *C. hircus* ("Capra, Gesn.").

Species :

1. HIRCUS. p. 68. *Capra.*

Linnean reference : Faun. Suec. no. 42.

Domestic Goat.

2. IBEX. p. 68. *Capra.*

Linnean reference : Syst. Nat. (6) p. 14, no. 6.

Reference to Ray only—p. 77 (misprinted 79).

Swiss Ibex.

Type locality : Swiss Alps—Valais.

3. RUPICAPRA. p. 68. *Rupicapra.*

Linnean reference : Syst. Nat. (6) p. 14, no. 5.

Chamois.

Type locality : Swiss Alps.

4. DEPRESSA. p. 69. (?)

Linnean reference : Syst. Nat. (6) p. 14, no. 2, where a further reference is given to the 3rd and 4th editions of the 'Systema,' but no additional information is there given.

Indeterminable.

5. REVERSA. p. 69. (?)

Linnean reference : Syst. Nat. (6) p. 14, no. 3, where also the 3rd and 4th editions are quoted.

Indeterminable.

6. PYGMEA. p. 69. *Neotragus.*

Linnean reference : Syst. Nat. (6) p. 14, no. 4, where Seba (i. p. 70, pl. xliii. fig. 3) is alone quoted.

Royal Antelope.

Type locality : Guinea.

7. GAZELLA. p. 67. *Oryx.*

Linnean reference : Syst. Nat. (6) p. 14, no. 8, where Ray's *Gazella indica* (p. 79) is alone quoted.

Common Gemsbok.

Locality not defined, but may be taken as S. Africa.

8. CERVICAPRA. p. 69. *Antelope.*

Linnean reference : Syst. Nat. (6) p. 14, no. 7, where there are two quotations—

Gazella africana, Ray, Quadr. p. 79.

Capricerva, Kæmpf. Amœn. p. 398, pl. 401, fig. 1.

Both refer to the Indian Black-Buck.

Type locality : India.

9. DORCAS. p. 69.

Gazella.

Linnean reference : (6) p. 14, no. 9, where the sole quotation is Ray, p. 80.

Common Gazelle.

No definite locality.

10. GRIMMIA. p. 70.

Cephalophus.

Linnean reference : Syst. Nat. (6) p. 14, no. 10, where the only quotation is to Ray's *Capra sylvestris africana grimmii*, which again refers to "Ephem. German. An. 14, Obs. 57," i. e. Grimm, Misc. cur. Acad. Nat. Cur., Decas ii. Ann. iv. p. 131 (1686).

Common Duiker.

Type locality : Cape Town.

11. MAMBRICA. p. 70.

Capra.

Linnean reference : Syst. Nat. (6) p. 14 (no. 11), where the primary quotation is to Ray, p. 81.

A long eared domestic Goat.

Type locality : Syria.

12. AMMON. p. 70.

Ovis.

Sole reference : Gesn. Quadr. p. 155, but the diagnosis and "Habitat in Siberia, Gmelin," indicate another and more essential source of information, which may be traced to J. G. Gmelin, Reise durch Siberien, i. p. 368 (footnote), 1751.

Siberian Wild-Sheep.

Type locality : Upper Irtisch R., Siberia.

Genus 32. OVIS. p. 70.

Three species. Type by tautonymy : *O. aries* ("Ovis, Gesn.").

Species :

1. ARIES. p. 70.

Ovis.

Linnean references : Faun. Suec. no. 43 ; Syst. Nat. (6) p. 15, no. 1.

Domestic Sheep.

Type locality : Sweden.

2. GUINEENSIS. p. 71.

Ovis.

Linnean reference : Syst. Nat. (6) p. 15, no. 3, where the reference is to Ray, who in turn quotes Maregrave.

Domestic Sheep of Guinea.

3. STREPSICEROS. p. 71.

Ovis.

Linnean reference : Syst. Nat. (6) p. 15, no. 2, whence Bellonius, Obs. i. p. 20, 1605.

Cretan Domestic Sheep.

Genus 33. Bos. p. 71.

Five species. Type by tautonymy : *B. taurus* ("Bos, Gesn.").

Species :

1. TAURUS. p. 71.

Bos.

Linnean references : Faun. Suec. no. 44 ; Syst. Nat. (6) p. 15, no. 1.

Domestic Ox.

Type locality : Sweden (Upsala).

2. BONASUS. p. 71.

Bison.

Linnean reference : Syst. Nat. (6) p. 15, no. 2, where there is no further reference, so we may take that in the 10th edition to the Bonasus of Ray (p. 71).

European Bison.

No type locality available.

3. BISON. p. 72.

Bison.

Linnean reference : Syst. Nat. (6) p. 15, no. 3, where the sole quotation is the "*Taurus mexicanus*" of Hernandez, Mexico, p. 587.

American Bison.

Type locality : "Mexico."

4. BUBALIS. p. 72.

Bubalus.

Linnean reference : Syst. Nat. (6) p. 15, no. 4, where a diagnosis, but neither further reference nor locality, is given. Passing to the next reference in the 10th edition, we get Ray (p. 72), whose account is based on the domesticated Buffalo. Therefore

Type locality : Italy (Rome).

5. INDICUS. p. 72.

Bos.

Sole reference : Edwards, Aves, iv. p. 200 (1751).

Indian Humped Ox.

Type locality : E. Indies.

Genus 34. Equus. p. 73.

Three species. Type by tautonymy : *E. caballus* ("Equus, Gesn.").

Species :

1. CABALLUS. p. 73.

Equus.

Linnean reference : Faun. Suec. no. 34.

Domestic Horse.

2. ASINUS. p. 73.

Equus.

Linnean reference : Faun. Suec. no. 35.

Domestic Ass.

3. ZEBRA. p. 74.

Equus.

Linnean reference : Syst. Nat. (6) p. 11, no. 3, where a diagnosis, but no locality or further reference, is given. Passing to the next reference we have Edwards, Aves, v. pp. 27 & 29, pls. 222 & 223, the first of which is a Mountain Zebra, and the second a Quagga. The first should be taken as typical.

Type locality : Cape of Good Hope.

Genus 35. HIPPOPOTAMUS. p. 74.

Two species. Type by tautonymy : *H. amphibius* ("Hippopotamus, Bell.").

Species :

1. AMPHIBIUS. p. 74.

Hippopotamus.

No Linnean reference, though the species occurs Syst. Nat. (6) p. 11.

Hippopotamus.

Type locality : R. Nile.

2. TERRESTRIS. p. 74.

Tapirus.

Two references : Tapiierete, Marcgr. Bras. p. 229 ; Ray, Quadr. p. 126, where Marcgrave is again quoted.

Brazilian Tapir.

Type locality : Pernambuco.

Genus 36. MONODOX. p. 75.

Monotypic.

Species :

1. MONOCEROS. p. 75.

Monodon.

Linnean references : Faun. Suec. no. 263 ; Syst. Nat. (6) p. 39.

Narwhal.

"Habitat in mari atlantico."

Genus 37. BALÆNA. p. 75.

Four species. Type by tautonymy : *B. mysticetus* ("Balæna, Will.").

Species :

1. MYSTICETUS. p. 75.

Balæna.

Linnean references : Faun. Suec. no. 264 ; Syst. Nat. (6) p. 39, no. 1.

In these places the species is called "Grönlands Waltisk" and

"Grönlandswal" respectively, so that the Greenland species of Right Whale may be at once accepted.

Type locality: Greenland seas.

Mr. True, in his 'Nomenclature of the Whalebone Whales',*, comes to the same conclusion, for the same reason, after two pages of discussion of what I venture to consider negligible synonyms.

2. PHYSALUS. p. 75.

Balænoptera.

Linnean references: Faun. Suec. no. 265; Syst. Nat. (6) p. 39, no. 2.

In both these places the reference is to Artedi (Gen. 77, Syn. 107), to which alone validity should be attached.

On reference to Artedi, we find Ray (Syn. Pisc. 9) quoted primarily, who in turn gives an abbreviated account of Martens's "Finfisch." This has been shown by Mr. True to be a Common Rorqual, to which, in agreement with him, I think the name *physalus* should be applied.

Type locality: Spitzbergen seas.

The result is therefore the same as Mr. True's, but the steps are formal, strict, and inevitable, and do not involve any balancing of the importance to be attached to different synonyms.

3. BOOPS. p. 76.

Balænoptera.

Linnean reference: Mus. Ad. Frid. i. p. 51 (misprinted 50).

But this reference is wrong as to page, and the diagnosis is a repetition of that of the succeeding species, *B. musculus*. It may therefore be ignored.

The next reference is to species iii. on p. 107 of Artedi's 'Synonyms,' where in turn Ray's "*Balæna tripinnis nares habens . . .*" is quoted. The latter is based on Sibbald's account of a whale which Mr. True shows to be the same as the last species, *B. physalus*, of which, therefore, *B. boops* is a synonym.

Type locality: Firth of Forth, Scotland.

4. MUSCULUS. p. 76.

Balænoptera.

Linnean reference: Syst. Nat. (6) p. 39, no. 3.

Here we get Artedi, Syn. p. 107, whence come references to Ray (Pisc. p. 17), and, at last, the real basis of all, Sibbald's 'Phalainologia.'

Sibbald's Rorqual.

Type locality: Firth of Forth, Scotland.

* P. U.S. Nat. Mus. xxi. p. 617. 1898.

Genus 38. PHYSETER. p. 76.

Four species nominally, but all prove to be the Sperm Whale, so that the genus is really monotypic.

Species :

1. CATODON. p. 76.

Physeter.

Linnean reference: Syst. Nat. p. 39, no. 1 (of *Catodon*, not *Physeter*), where there is a reference to the "*Catodon fistula in rostro*" of Artedi (Syn. p. 108), by whom in turn Ray and Sibbald are quoted.

Ray's account is abbreviated from that of Sibbald, whose *Balæna minor**, from Kairston, Orkneys, is the real basis of the name.

This animal has been said by some authors to be the Beluga, and by others the Sperm Whale, and after a careful consideration of the question, with the kind and highly opportune assistance of Dr. Einar Lönnberg, I am decidedly of opinion that it was the latter species.

The absence of teeth in the upper jaw is a definite character, to which much weight should be attached; while the fact that females of the Sperm Whale go together in schools would account for the large number (105) stranded at Kairston, and their comparatively small size (24 feet).

As a consequence, the Sperm Whale should bear the name of *Physeter catodon* L., of which the next name would be a synonym.

Type locality: Kairston, Orkneys.

2. MACROCEPHALUS. p. 76.

Physeter.

Linnean references: Faun. Suec. no. 262; Syst. Nat. (6) p. 39, no. 2 (of *Catodon*).

Sperm Whale (*Physeter catodon*, see above).

Type locality: Norwegian seas.

3. MICROPS. p. 76.

(*Physeter.*)

Linnean reference: Syst. Nat. (6) p. 39, no. 1 (of *Physeter*), where Artedi (Syn. 104, Gen. 74) is alone quoted.

4. TURSIO. p. 77.

(*Physeter.*)

Linnean reference: Syst. Nat. (6) p. 39, no. 2 (of *Physeter*), where Artedi (Syn. 104, Gen. 74) is alone quoted.

These two names refer to the mythical "High-finned Cachalot," whose origin no doubt lies in faulty observation of ordinary Cachalots, and they may be considered as synonyms of *Physeter catodon*.

* 'Phalainologia nova.' Caput ii. p. 24.

Genus 39. DELPHINUS. p. 77.

Three species. Type by tautonymy: *D. delphis* ("Delphinus, Bell.").

Species:

1. PHOCÆNA. p. 77. *Phocæna*.

Linnean references: Faun. Suec. no. 266; Syst. Nat. (6) p. 39, no. 1.

Common Porpoise.

Type locality: Swedish seas.

2. DELPHIS. p. 77. *Delphinus*.

Linnean reference: Syst. Nat. (6) p. 39, no. 2, where Artedi (Syn. 105) is alone quoted.

Common Dolphin.

Type locality: "European seas."

3. ORCA. p. 77. *Orcinus*.

Linnean references: Faun. Suec. no. 267; Syst. Nat. (6) p. 39, no. 3.

Common Killer.

Type locality: North Sea.

10. The Duke of Bedford's Zoological Exploration of Eastern Asia.—XIII. On Mammals from the Provinces of Kan-su and Sze-chwan, Western China. By OLDFIELD THOMAS, F.R.S., F.Z.S.

[Received and Read February 7, 1911.]

After making the fine collection from Shan-si and Shen-si, which formed the subject of No. XI. of the present series of papers, the Duke of Bedford's collector, Mr. Malcolm Anderson, paid a visit to Europe and America, and then returned again to China in the autumn of 1909. He there obtained the services of Dr. J. A. C. Smith and Mr. Kingdon Ward, who accompanied him in his further explorations inland.

The party first went up into Southern Shen-si, whence a small collection was sent home, which included the three species whose descriptions were published in the 'Proceedings'*. The other forms then obtained will be referred to in a succeeding paper.

The next collection was made in the mountain region of S.W. Shen-si, but, owing to accidental delays, has reached London later than the succeeding set, which forms the subject of the present paper.

Mr. Anderson's party then proceeded into Kan-su, a province

* P. Z. S. 1910, p. 635. These descriptions, though not so numbered, may be considered to form No. XII. of the present series of papers.